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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/706,254
Filing Date: November 12, 2003
Appellant(s): FLYNN ET AL.

John L. Rogitz
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed December 26, 2005 appealing from the Office action mailed December 22, 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is incorrect. A correct statement of the status of the claims is as follows: The rejection to claims 14 and 15 is withdrawn. Claims 14 and 15 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

6,285,521	Hussein	9-2001
6,785,075	Bryant et al	8-2004

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims, as stated in the final rejection and repeated herein for ease of reference:

1. Claims 1, 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Hussein (USPN 6,285,521).

RE claim 1, Hussein discloses a HDD **(see figure 1 or column 3 lines 65-66; i.e., the hard disk drive 30)**, comprising: at least one write channel including at least one write gate **(see figure 1 or column 5 lines 42-50; i.e., the write channel 68 including write gate WG2)**; and control circuitry encoding write control bits for controlling the write gate to selectively enable writing data bits associated with a servo pattern onto at least one disk **(see figure 1 or column 5 lines 42-60 and column 4 lines 34-35; i.e., the servo controller 98 encoding write control bits for controlling the write gate WG2 to selectively enable writing data bits associated with a servo pattern onto disk 46)**.

RE claim 2, Hussein discloses that the write channel is used during operation to write user data to the disk **(see figure 1 or column 5 lines 8-13; i.e., the write channel 68 is used during operation to write user data to disk surface of disk 46)**.

2. Claims 5, 12-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hussein (USPN 6,285,521) in view of Bryant et al (USPN 6,785,075), hereafter as Bryant.

RE claims 5 and 16, Hussein discloses the invention substantially as claimed.

However, Hussein does not specifically disclose that the control circuitry determines a write delay to a next timing mark based on a current timing mark, the time delay including a clock cycle component and a clock phase component, the write channel using the write delay to write the next timing mark and associated portions of the servo pattern to disk.

Bryant teaches that the control circuitry determines a write delay to a next timing mark based on a current timing mark **(see column 6 lines 60-67 and column 8 lines 19-30 and figure 5 and column 8 lines 40-44; i.e., the programmable delay circuit 172 determines/creates a write delay between a current timing mark and next timing mark outputted by clock generator phase locked loop circuit 168)**, the time delay including a clock cycle component and a clock phase component **(see column 7 lines 24-27; i.e., the delay of clock phase or clock timing)**, the write channel using the write delay to write the next timing mark and associated portions of the servo pattern to disk **(see column 8 lines 8-44 and column 3 lines 24-29; i.e., the write channel 186 using the write delay determined by the programmable delay circuit 172 to write next timing mark/field or servo field to disk surface 106)**.

Hussein and Bryant are combinable because they are from the same field of endeavor. It would have been obvious to one having ordinary skill in the art at the time

the invention was made to modify the Hussein invention by including the programmable delay circuit 172 from Bryant for determining a write delay between a current timing mark and a next timing mark for the write channel to use for writing the next timing mark and associated portions of servo pattern to disk in order to keep the information currently written aligned in time and coherent in phase and frequency with information previously written on the disk as expressly stated at column 2 lines 47-54 of Bryant.

RE claim 12, Hussein discloses the invention substantially as claimed. Hussein discloses a system **(see figure 1; i.e., the system 30)**, comprising: a hard disk drive controller **(see figure 1 and column 4 lines 56-59; i.e., the disk controller 80)**; at least one disk onto which the controller writes user data using at least one write channel, the write channel including a write gate **(see column 4 lines 56-59 and column 5 lines 4-13, 42-60 and figure 1; i.e., the controller 80 writes user data using write channel 68 to disk 46, the write channel 68 including a write gate WG2)**, gate control means for selectively enabling and disabling the write gate while the write channel remains energized **(see column 5 lines 42-60; i.e., the servo controller 98 functioned as the gate control means for selectively enabling and disabling the write gate WG2 while the write channel 68 remains energized)**.

However, Hussein does not specifically disclose means for, at least prior to providing the system to the user, writes a servo pattern on the disk.

Bryant teaches a self-servowriting system that writes clock fields aligned in time and coherent in phase and frequency to servo pattern and clock fields previously written

on a disk drive (see column 1 lines 14-18). This system self writes servo patterns on disk before the system can be actually used by an user for storing user data.

Hussein and Bryant are combinable because they are from the same field of endeavor. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Hussein by including the self-servowriting system from Bryant for self-servowriting servo patterns on a disk before the disk can actually be used for storing user data in order to cut down the costs for manufacturing a hard disk drive. Because writing servo patterns on a disk in a disk drive by self-servowriting through using the disk drive's internal read/write head costs much less than writing servo patterns by using an external servo writer.

RE claim 13, Hussein discloses that the gate control means include write control bits **(see column 5 lines 48-50, 58-60; i.e., the servo controller 98 enables write gate WG2 by asserting write control bits)**.

RE claim 14, Hussein in view of Bryant discloses the invention substantially as claimed.

However, neither Hussein nor Bryant specifically disclose that two write control bits of a ten bit parallel bus establish write control bits to indicate whether the write gate should enable writing one or more of the remaining eight bits of the bus to disk.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the control circuitry to encode two bits of a ten bit input parallel bus to indicate whether the write gate should enable writing one or more of the remaining eight bits of the bus to a disk since the examiner takes Official Notice of the

fact that it is notoriously old and well known in the data storage art to modify a combinational circuit to encode any selected bits out of a range of input bits into a binary pattern for enabling or activating the remaining number of bits.

RE claim 15, Hussein in view of Bryant discloses the invention substantially as claimed.

However, neither Hussein nor Bryant specifically disclose that four bits of an eight bit parallel bus establish write control bits to indicate whether the write gate should enable writing one or more of the remaining four bits of the bus to disk.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the control circuitry to encode four bits of an eight bit parallel bus to indicate whether the write gate should enable writing one or more of the remaining four bits of the bus to disk since the examiner takes Official Notice of the fact that it is notoriously old and well known in the data storage art to modify a combinational circuit to use any number of data bits to represent an enable signal out of a selected data string.

3. Claims 6-11, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bryant et al (USPN 6,785,075), hereafter as Bryant, in view of Hussein (USPN 6,285,521).

RE claim 6, Bryant discloses the invention substantially as claimed. Bryant discloses a method for self-writing a servo pattern to a disk using a write channel intended for subsequently writing user data **(see column 1 lines 16-18 and column 3**

lines 1-9 or figure 4), comprising: receiving a servo pattern defined by a stream of data bits **(see column 6 lines 26-33; i.e., reading the reference servo fields)**.

However, Bryant does not specifically disclose that associating write control bits with the servo pattern, values of the write control bits indicating whether a write gate associated with the write channel is enabled or disabled.

Hussein teaches using servo controller 98 encoding write control bits for controlling the write gate WG2 to selectively enable writing data bits associated with a servo pattern onto disk 46 **(see figure 1 or column 5 lines 42-60 and column 4 lines 34-35)**.

Bryant and Hussein are combinable because they are from the same field of endeavor. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Bryant by including the servo controller 98 from Hussein for encoding write control bits for selectively controlling a write gate to enable data bits writing associated with a servo pattern onto a disk in order to improve the system performance of a hard disk drive. Because using a write channel to selectively enable or disable a write gate through write control bits can decrease recovery time to resume data read/write operation after an idle period **(see column 2 lines 30-32 in Hussein)**.

RE claims 7-9, Bryant in view of Hussein discloses the invention substantially as claimed.

However, neither Bryant nor Hussein specifically teaches that a write control bit is associated with at least one data bit, or associated with one and only one data bit, or associated with at least two data bits.

It would have been an obvious matter of design choice to make a write control bit to be associated with between the choice of at least one data bit, or one and only one data bit or at least two data bits, since such a modification would have involved a mere change in the size of a component. A change in size is generally recognized as being within the level of ordinary skill in the art. ***In re Rose, 105 USPQ 237 (CCPA 1955)***.

RE claim 10, Bryant discloses writing the servo pattern on the disk after the disk has been sealed in a housing **(see column 1 lines 61-67 and column 2 lines 1-6; i.e., the self servo writing is achieved after the disk has been sealed in a hard disk drive housing)**.

RE claim 11, Bryant teaches that determining a write delay to a next timing mark based on detecting a current timing mark **(see column 6 lines 60-67 and column 8 lines 19-30 and figure 5 and column 8 lines 40-44; i.e., the programmable delay circuit 172 determines/creates a write delay between a current timing mark and next timing mark outputted by clock generator phase locked loop circuit 168)**, the time delay including a clock cycle component and a clock phase component **(see column 7 lines 24-27; i.e., the delay of clock phase or clock timing)**, using the write delay to write the next timing mark and associated portions of the servo pattern to disk **(see column 8 lines 8-44 and column 3 lines 24-29; i.e., the write channel 186**

using the write delay determined by the programmable delay circuit 172 to write next timing mark/field or servo field to disk surface 106).

RE claim 17, Bryant discloses a HDD **(see figure 1 or column 4 line 37; i.e., the disc drive 100)**, comprising: at least one write channel configured for writing user data to a disk **(see figure 4 or column 8 lines 8-10; i.e., the write channel 186 configured for writing user data to disk surface 106)**; and control circuitry determining a single write delay from a prior timing mark to indicate writing of a subsequent timing mark and at least a portion of a servo pattern **(see column 6 lines 60-62 and column 8 lines 8-44; i.e., the programmable delay circuit 172 determines/creates a write delay between a current timing mark and next timing mark outputted by clock generator phase locked loop circuit 168, and the write channel 186 using the write delay determined by the programmable delay circuit 172 to write next timing mark/field or servo field to disk surface 106)**.

However, Bryant does not specifically that at least one write gate in a write channel, the write gate being controllable using write control bits generated by the control circuitry to selectively enable writing data bits associated with a servo pattern onto at least one disk.

Hussein teaches that at least one write gate in a write channel **(see figure 1 or column 5 lines 42-50; i.e., the write channel 68 including write gate WG2)**, the write gate being controllable using write control bits generated by the control circuitry to selectively enable writing data bits associated with a servo pattern onto at least one disk **(see figure 1 or column 5 lines 42-60 and column 4 lines 34-35; i.e., the servo**

controller 98 encoding write control bits for controlling the write gate WG2 to selectively enable writing data bits associated with a servo pattern onto disk 46).

Bryant and Hussein are combinable because they are from the same field of endeavor. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Bryant by including the servo controller 98 from Hussein for encoding write control bits for selectively controlling a write gate to enable data bits writing associated with a servo pattern onto a disk in order to improve the system performance of a hard disk drive. Because using a write channel to selectively enable or disable a write gate through write control bits can decrease recovery time to resume data read/write operation after an idle period **(see column 2 lines 30-32 in Hussein)**.

(10) Response to Argument

(a). In the brief, Appellant argued that "Nowhere does Hussein mention writing a servo pattern, something that ordinarily is done prior to vending the HDD. Indeed, Hussein appears to be directed to conventional disk operation. Thus, the disablement of the write gate by the servo controller discussed in col. 5 has nothing to do with writing data bits associated with a servo pattern as recited in claim 1. The data written by Hussein is conventional client data, and the servo controller evidently is a conventional servo controller that coordinates slider positioning with data reading and writing, without having anything to do with writing a servo pattern."

In response to Appellant's argument (a), claim 1 is claiming writing data bits associated with a servo pattern, not claiming writing ***servo*** data bits associated with a

servo pattern. Therefore, according to the definition of "associated" (i.e., meaning To unite in a relationship; see Webster's II New Riverside University Dictionary), the Examiner can interpret the claim language as writing client data (or user data) bits associated with a servo pattern. In general, performing a client (or user) data writing operation in a disk drive requires a head to obtain the address (location) information from a servo pattern first in order for the head to know where to write the data on a disk surface successfully. Thus, the Examiner can interpret the claim language as writing client data (or user data) bits associated (united in a relationship) with a servo pattern.

(b1) In the brief, Appellant argued that "Since nothing in Hussein teaches doing anything at all related to servo writing, and since Bryant et al does not appear to servo write as done in claim 12, combining the references as proposed would result only in Bryant et al's conventional servo writing in combination with Hussein's subsequent non-servo writing – but not in claim 12. For this reason, the rejections merit reversal."

In response to Appellant's argument (b1), Hussein discloses a system **(see figure 1; i.e., the system 30)**, comprising: a hard disk drive controller **(see figure 1 and column 4 lines 56-59; i.e., the disk controller 80)**; at least one disk onto which the controller writes user data using at least one write channel, the write channel including a write gate **(see column 4 lines 56-59 and column 5 lines 4-13, 42-60 and figure 1; i.e., the controller 80 writes user data using write channel 68 to disk 46, the write channel 68 including a write gate WG2)**, gate control means for selectively enabling and disabling the write gate while the write channel remains energized **(see column 5 lines 42-60; i.e., the servo controller 98 functioned as the gate control**

means for selectively enabling and disabling the write gate WG2 while the write channel 68 remains energized). And Bryant teaches a self-servo writing system that writes clock fields aligned in time and coherent in phase and frequency to servo pattern and clock fields previously written on a disk drive (see column 1 lines 14-18). This system self writes servo patterns on the disk before the system can be actually used by an user for storing user data. Hussein and Bryant are combinable because they are from the same field of endeavor. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the Hussein by including the self-servo writing system from Bryant for self-servo writing servo patterns on a disk before the disk can actually be used for storing user data in order to cut down the costs for manufacturing a hard disk drive. Because writing servo patterns on a disk in a disk drive by self-servowriting through using the disk drive's internal read/write head costs much less than writing servo patterns by using an external servo writer.

(b2) In the brief, Appellant argued that, for rejecting claim 12, "The examiner's response further points to col. 2 lines 30-32 of Hussein for the requisite motivation to combine. For the Board's convenience, here is the sum total of the prior art evidence to combine proffered by the examiner and SPE: In addition, there is a need to reduce the power consumption in the spindle motor and its power MOSFETs without significantly increasing the recovery time to resume read and write operations after an idle period. In other words, the relied-upon suggestion to combine appears to be beyond irrelevant to servo writing at all, and in fact approaches proving Appellant's points. As the section

identified by the Examiner proves, Hussein is consumed with actual client data reads and writes. It is not at all related to writing servo patterns."

In response to Appellant's argument (b2), the Examiner did not point to col. 2 lines 30-32 of Hussein for requisite motivation to combine. Instead, the Examiner stated that the motivation to combine Bryant et al into Hussein is to cut down the costs for manufacturing a hard disk drive. Because writing servo patterns on a disk in a disk drive by self-servo writing through using the disk drive's internal read/write head costs much less than writing servo patterns by using an external servo writer. Please refer to Office Action mailed on 12/22/2005 for evidence.

(c1) In the brief, Appellant argued that, "Claim 6 recites self-writing a servo pattern to a disk using a write channel intended for subsequently writing user data, and goes on to specify that values of write control bits indicate whether a write gate associated with the write channel is enabled or disabled. Accordingly, claim 6 requires using the write channel and write gate for self-servo writing that subsequently are used to write user data. That is not, however, how Bryant et al works. Indeed, when servo self-writing, Bryant et al uses a channel and presumely a gate that are different from the ones used for writing user data, col. 8, lines 10-18 (the mux 178 switches off the data write circuit portion 186 in favor of the pattern generator circuit 176, while using the data read portion). In fact, the rejection admits as much, resorting to the above-discussed portions of Hussein to remedy the shortfall. But as discussed above, Hussein is not directed to servo pattern writing at all, so the allegation that it controls a write gate to

write a servo pattern is incorrect. In other words, combining the references as proposed would not arrive at claim 6."

In response to Appellant's argument (c1), Bryant et al teaches using write channel 186 to perform self-servo writing based on the servo pattern generated by the pattern generator circuit 176 (see column 8 lines 8-18). In the meantime, Bryant et al also teaches that the write channel 186 can be switched to write normal data (i.e., not servo data) by multiplexer 178 (see column 8 lines 8-18). Even though Hussein is not directed to servo pattern writing, but the servo controller 98 along with the read/write channel 68 from Hussein can perform the encoding write control bits for selectively controlling write gate WG 2 to enable/disable head 64 to perform a write operation (see column 5 lines 53-60 and column 4 lines 25-35). It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Bryant's device by including the servo controller 98 from Hussein for encoding write control bits for selectively controlling a write gate to enable data bits writing associated with a servo pattern onto a disk in order to improve the system performance of a hard disk drive.

(c2) In the brief, Appellant argued that, "The rejections of claims 7-9 are likely legal deficient, being based on an admission that while the relied-upon references fail to teach it, it nonetheless would have been obvious based on a change of size theory. The reliance on Rose is inapposite. Applicant is not claiming a differently-sized element that is otherwise shown in the prior art. Applicant is claiming a specific relationship between a write control bit and a data bit. Relationships between data elements are not sizes. The rejections of claims 7-9 are overcome."

In response to Appellant's argument (c2), it is an obvious matter of design choice to make a write control bit to be associated with the choice of at least one data bit, or one and only one data bit or at least two data bits, since such modifications are akin to optimizing the values of a result effective variable. Therefore, determining the optimal value of a result effective variable would have been obvious and ordinarily within the skill of the art. ***In re Boesch***, 617 F.2d 272, 276, 205, USPQ 215, 219 (CCPA 1980). Furthermore, upon further review of the specification, Appellant does not appear to even have support for the limitation "one and only one data bit".

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Fred F. Tzeng

Andrea Wellington, SPE

Conferees:

Craig Renner, Primary Examiner